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EXAMINER
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ZERVIGON, RUDY

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 08/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/667,777

Applicant(s)

KOMINO ET AL.

Examiner

Rudy Zervigon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 May 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 6,8-11,16,18-21,23,27,29 and 31-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 6,8-11,16,18-21,23,27,29 and 31-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3/14/2005
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 6, 8-11, 16, 19-21, 27, 29, and 31-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sagusa et al (JP09-165681)<sup>1</sup> in view of Smith; Peter C. (US 5,600,530 A) and Niori; Yusuke et al (US 6,101,969 A).

Sagusa et al (JP09-165681) teaches:

- i. a susceptor (Figure 1A,B; Figure 3,4) comprising: A base metal (“aluminum rolled stock 13” [0011]) made of a cast metal – Applicant’s specification (page 12, line 37 – page 13, line 2) teaches aluminum as the “cast metal”, claim 6, 16
- ii. a heater (“sheath heater 11”; [0011] computer translation) arranged in a plane; claim 6, 16
- iii. an upper (above) ceramic-metal composite (12, “cordierite” (2MgO, 2Al<sub>2</sub>O<sub>3</sub>, and 5SiO<sub>2</sub>), [0012]) of ceramics” [0012]) arranged above the heater (coil 11; Figure 1B,3); claim 6, 16
- iv. wherein the heater (“sheath heater 11”; [0011] computer translation) and the upper ceramic-metal composite (12, “cordierite” (2MgO, 2Al<sub>2</sub>O<sub>3</sub>, and 5SiO<sub>2</sub>), [0012]) are cast<sup>3</sup> in the base metal (“aluminum rolled stock 13” [0011]) so that the upper ceramic-metal composite (12, “cordierite” (2MgO, 2Al<sub>2</sub>O<sub>3</sub>, and 5SiO<sub>2</sub>), [0012]) and the heater (“sheath heater 11”; [0011] computer translation) are embedded in the base metal (“aluminum

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<sup>1</sup> Refer to Japanese Patent Office machine translation of November 6, 2002.

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- rolled stock 13" [0011]); and wherein the upper ceramic-metal composite (12, "cordierite" (2MgO, 2Al<sub>2</sub>O<sub>3</sub>, and 5SiO<sub>2</sub>), [0012]) contains a ceramic material (Al<sub>2</sub>O<sub>3</sub>) and a metallic material (Al) composite of the base metal ("aluminum rolled stock 13" [0011]), - claim 6, 16
- v. the susceptor according to claim 6, wherein the ceramic material (Al<sub>2</sub>O<sub>3</sub>) contained in the upper (above) ceramic-metal composite (12, "cordierite" (2MgO, 2Al<sub>2</sub>O<sub>3</sub>, and 5SiO<sub>2</sub>), [0012]) of ceramics" [0012]) is in a form of a preformed porous block and is infiltrated<sup>2</sup> with the base metal ("aluminum rolled stock 13" [0011]) made of a cast metal – Applicant's specification (page 12, line 37 – page 13, line 2) teaches aluminum as the "cast metal", as claimed by claim 31
- vi. the susceptor according to claim 6, further comprising a lower (below) ceramic-metal composite (12, "cordierite" (2MgO, 2Al<sub>2</sub>O<sub>3</sub>, and 5SiO<sub>2</sub>), [0012]) of ceramics" [0012]) arranged below the heater (coil 11; Figure 1B,3) and cast in the base metal ("aluminum rolled stock 13" [0011]) made of a cast metal – Applicant's specification (page 12, line 37 – page 13, line 2) teaches aluminum as the "cast metal", as claimed by claim 32, 34
- vii. the plasma processing apparatus according to claim 16, wherein the ceramic material (Al<sub>2</sub>O<sub>3</sub>) contained in the upper (above) ceramic-metal composite (12, "cordierite" (2MgO, 2Al<sub>2</sub>O<sub>3</sub>, and 5SiO<sub>2</sub>), [0012]) of ceramics" [0012]) arranged above the heater (coil 11; Figure 1B,3) is in a form of a preformed porous block and is infiltrated<sup>2</sup> with the base metal ("aluminum rolled stock 13" [0011]) made of a cast metal – Applicant's

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<sup>2</sup> Infiltrate vb 1 : to cause (as a liquid) to permeate something by penetrating its pores or interstices.

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specification (page 12, line 37 – page 13, line 2) teaches aluminum as the “cast metal”, as claimed by claim 33

Sagusa does not teach:

- viii. a ceramic electrostatic chuck having an upper surface and a lower surface opposite the upper surface (top 13' Figure 4), the upper surface (top 13' Figure 4) being adapted to support an object to be processed thereon; claim 6, 16
- ix. wherein Sagusa's upper ceramic-metal composite (12, “cordierite” (2MgO, 2Al<sub>2</sub>O<sub>3</sub>, and 5SiO<sub>2</sub>), [0012]) has an upper surface (top 13' Figure 4) joined to a lower surface of an electrostatic chuck; claim 6, 16
- x. the upper surface (top 13' Figure 4) of Sagusa's upper ceramic-metal composite (12, “cordierite” (2MgO, 2Al<sub>2</sub>O<sub>3</sub>, and 5SiO<sub>2</sub>), [0012]) is exposed for joining to an lower surface of an electrostatic chuck; claim 6, 16
- xi. a mixing ratio between Sagusa's ceramic material (Al<sub>2</sub>O<sub>3</sub>) and Sagusa's metallic material (Al) is determined so that Sagusa's upper ceramic-metal composite (12, “cordierite” (2MgO, 2Al<sub>2</sub>O<sub>3</sub>, and 5SiO<sub>2</sub>), [0012]) has a coefficient of linear thermal expansion substantially the same as that of an electrostatic chuck; claim 6, 16
- xii. the susceptor according to claim 6, wherein the ceramic electrostatic chuck includes a ceramic base of a ceramic material (Al<sub>2</sub>O<sub>3</sub>) and a metallic electrode embedded in the ceramic base and adapted to generate an electrostatic force that attracts the object to be treated, as claimed by claim 27
- xiii. the plasma processing apparatus according to claim 16, wherein the ceramic electrostatic chuck includes a ceramic base of a ceramic material (Al<sub>2</sub>O<sub>3</sub>) and a metallic electrode

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embedded in the ceramic base and adapted to generate an electrostatic force that attracts the object to be treated, as claimed by claim 29

Smith teaches a composite electrostatic chuck (Figure 2; column 4; lines 30-69) including:

- xiv. a ceramic electrostatic chuck (54; Figure 2; column 4; lines 30-45) having an upper surface (50; Figure 2) and a lower surface (58/54 interface; Figure 2) opposite the upper surface, the upper surface (50; Figure 2) being adapted to support an object to be processed thereon
- xv. wherein Smith's upper ceramic-metal composite (58; Figure 2; column 4; lines 30-45) has an upper surface (58/54 interface) joined to a lower surface (58/54 interface) of an electrostatic chuck (54; Figure 2);
- xvi. the upper surface (58/54 interface) of Smith's upper ceramic-metal composite (58; Figure 2; column 4; lines 30-45) is exposed for joining to an lower surface (58/54 interface) of an electrostatic chuck (54; Figure 2; column 4; lines 30-45)
- xvii. Smith's electrostatic chuck (54; Figure 2; column 4; lines 30-45) and ceramic-metal composite (58; Figure 2; column 4; lines 30-45) are brazed/adhered/welded together (column 4; lines 30-40), - claim 8, 10, 19, 21
- xviii. a plasma processing vessels (column 1; lines 58-67; column 3; lines 31-42) – claim 16

Niori teaches a heated ceramic chuck (Figure 4; column 14; lines 45-65). Niori further teaches Niori's susceptor (Figure 4) according to claim 6, wherein Niori's susceptor (Figure 4) is configured so that a high frequency voltage (21-column 15; lines 49-65) is applied thereto. Niori further teaches a metallic electrode (14; Figure 1B) embedded in the ceramic base (130A,B).

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to embed Smith's electrostatic chuck to Sagusa's upper, exposed, ceramic-metal composite (12, "cordierite" ( $2\text{MgO}$ ,  $2\text{Al}_2\text{O}_3$ , and  $5\text{SiO}_2$ ), [0012]; Figure 3,4) and optimize the compositions for achieving thermal expansion matching.

Motivation to embed Smith's electrostatic chuck to Sagusa's upper, exposed, ceramic-metal composite and optimize the compositions for achieving thermal expansion matching is for making a heated ceramic chuck that is durable as taught by Sagusa ([0012]), Smith (column 3; lines 1-3), and Niori (column 15; lines 1-16).

3. Claims 23, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirano; Shinsuke et al. (US 6,120,661 A) in view of Sagusa et al (JP09-165681). Hirano teaches a method of making a susceptor (Figure 1A), comprising: placing a heater (15; column 13; lines 53-65) and a first porous ceramic block (12) in a mold (column 13; lines 53-65). Hirano further teaches metal infiltration by immersion of ceramic members to form ceramic-metal composites (column 6, lines 15-32). Hirano further teaches joining (column 14; lines 10-25) a ceramic electrostatic chuck (14; Figure 1B; column 14; lines 10-25) onto a surface of ceramic-metal composite wherein a porosity (column 5; lines 32-51) of the porous ceramic block (12) is predetermined.

Hirano does not teach pouring a molten base metal into a mold to cast Hirano's porous ceramic block (12) and heater (15) in a base metal. Hirano does not teach a porosity of the porous ceramic block (12) is determined so that the ceramic-metal composite has a coefficient of linear thermal expansion substantially the same as that of the electrostatic chuck. Hirano further teaches

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a second porous ceramic block (130A,B; Figure 1B) is placed in the mold (column 13; lines 53-65) together with the first porous ceramic block (12) and the heater (15) so that the heater is arranged between the first and second porous ceramic blocks.

Sagusa teaches matching thermal expansions of composite ceramics (12; Figure 1B) bounded by aluminum metal stock (13; [0021]) – “because it approximates with the coefficient of thermal expansion of the heater plate 10”.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to pour Sagusa’s aluminum base metal into Hirano’s mold and optimize the porosity of Hirano’s porous ceramic block to match the resulting structure’s thermal expansion coefficients as taught by Hirano and Sagusa.

Motivation to pour Sagusa’s aluminum base metal into Hirano’s mold and optimize the porosity of Hirano’s porous ceramic block to match the resulting structure’s thermal expansion coefficients as taught by Hirano and Sagusa is for achieving isotropic properties (thermal expansion, thermal conductivity, electric conductivity) among dissimilar composites as taught by Hirano (column 6; lines 5-13).

4. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sagusa et al (JP09-165681), Smith; Peter C. (US 5,600,530 A), and Niori; Yusuke et al (US 6,101,969 A) in view of McMillin; Brian et al. (US 5,835,334 A). None of Sagusa, Smith, and Niori teach heat

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transfer passages. McMillin teaches heat transfer passages (6a; Figure 1) in his electrostatic chuck assembly (Figure 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add McMillin's heat transfer passages to Sagusa, Smith, and Niori's electrostatic chuck assembly.

Motivation to add McMillin's heat transfer passages to Sagusa, Smith, and Niori's electrostatic chuck assembly is for managing processing temperatures as taught by McMillin (column 5; lines 14-24).

### ***Response to Arguments***

5. Applicant's arguments filed May 27, 2005 have been fully considered but they are not persuasive.

6. Applicant's amendment to claim 23 has overcome the rejection under 35 USC 112, 2<sup>nd</sup> paragraph.

7. Applicant states:

“

For example, none of the cited references discloses or otherwise suggests, among other things, a heater and an upper ceramic-metal composite being cast in a base metal so that the upper ceramic-metal composite and the heater are embedded in the base metal while leaving an upper surface of the upper ceramic-metal composite exposed for joining to a lower surface of the electrostatic chuck, wherein the upper ceramic-metal composite contains a ceramic material and a metallic material consisting of the base metal.

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“

In response, the Examiner disagrees. The Examiner specifically recited the claim word-by-claim word teachings of Sagusa et al (JP09-165681) who teaches a heater (“sheath heater 11”; [0011] computer translation) arranged in a plane and an upper (above) ceramic-metal composite (12, “cordierite” (2MgO, 2Al<sub>2</sub>O<sub>3</sub>, and 5SiO<sub>2</sub>), [0012]) of ceramics” [0012]) are cast<sup>3</sup> in the base metal (“aluminum rolled stock 13” [0011]) so that the upper ceramic-metal composite (12, “cordierite” (2MgO, 2Al<sub>2</sub>O<sub>3</sub>, and 5SiO<sub>2</sub>), [0012]) and the heater (“sheath heater 11”; [0011] computer translation) are embedded in the base metal (“aluminum rolled stock 13” [0011]), and .. wherein the upper ceramic-metal composite (12, “cordierite” (2MgO, 2Al<sub>2</sub>O<sub>3</sub>, and 5SiO<sub>2</sub>), [0012]) contains a ceramic material (Al<sub>2</sub>O<sub>3</sub>) and a metallic material (Al) composite of the base metal (“aluminum rolled stock 13” [0011]) as claimed by claim 6, 16.

However, the Examiner already conceded that Sagusa does not teach that Sagusa’s upper surface (top 13’ Figure 4) of Sagusa’s upper ceramic-metal composite (12, “cordierite” (2MgO, 2Al<sub>2</sub>O<sub>3</sub>, and 5SiO<sub>2</sub>), [0012]) is exposed for joining to an lower surface of an electrostatic chuck; claim 6, 16. Further, the Examiner has demonstrated that Smith teaches the deficiencies of Sagusa. Smith teaches the upper surface (58/54 interface) of Smith’s upper ceramic-metal composite (58; Figure 2; column 4; lines 30-45) is exposed for joining to an lower surface (58/54 interface) of an electrostatic chuck (54; Figure 2; column 4; lines 30-45). The motivation for combining the references is reproduced above. The Examiner believes said motivation is proper.

8. Applicant states:

“

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The aluminum ceramic composite 12, however, cannot correspond to the recited “base metal” because, among other reasons, it does not contain “a ceramic material and a metallic material consisting of the base metal,” as recited in claims 6 and 16. Instead, the composite 12 of Sagusa is formed of a mixed powder of aluminum and ceramic materials, where the aluminum powder does not consist of the aluminum rolled material 13 (i.e., alleged by the Office Action to correspond to the recited “base metal”). Instead, the aluminum rolled material 13 and the aluminum powder in the aluminum ceramic composite 12 are separate and distinct from one another. None of the cited secondary references discloses or suggests this deficiency of Sagusa.

“

9. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., Applicant's “base metal” having “a ceramic material and a metallic material consisting of the base metal”) are not recited in the rejected claims. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Specifically, the claim text to which Applicant refers requires that “wherein the upper ceramic-metal composite contains a ceramic material and a metallic material consisting of the base metal”, in claims 6, and 16. As such, it is Applicant's claimed “upper ceramic-metal composite” which contains:

- i. a ceramic material
- ii. a metallic material consisting of the base metal

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<sup>3</sup> Cast *vb* 3 a : to dispose or arrange into parts or into a suitable form or order. Merriam-Webster's Collegiate Dictionary - 10th Ed. p.178

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To this, the Examiner has cited the corresponding elements in the prior art, where Sagusa is specific in teaching an upper ceramic-metal composite (12, “cordierite” ( $2\text{MgO}$ ,  $2\text{Al}_2\text{O}_3$ , and  $5\text{SiO}_2$ ), [0012]) which contains:

- i. a ceramic material - “cordierite” ( $2\text{MgO}$ ,  $2\text{Al}_2\text{O}_3$ , and  $5\text{SiO}_2$ ), Machine translation section [0012]
- ii. a metallic material (Al from  $2\text{Al}_2\text{O}_3$ ) consisting of the base metal (“aluminum rolled stock 13”, machine translation section [0011])

10. Applicant states:

“

Moreover, the aluminum rolled material 13 of Sagusa cannot correspond to the recited “base metal” because, among other things, the sheathed heater 11 and the aluminum ceramic composite 12 are not cast in the aluminum rolled material 13.

“

In response, the Examiner directs Applicant to the dictionary definition of the verb “cast” (see footnotes) and the Examiner’s reiterated claim rejection: “...wherein the heater (“sheath heater 11”; [0011] computer translation) and the upper ceramic-metal composite (12, “cordierite” ( $2\text{MgO}$ ,  $2\text{Al}_2\text{O}_3$ , and  $5\text{SiO}_2$ ), [0012]) are cast<sup>3</sup> in the base metal (“aluminum rolled stock 13” [0011])...”.

11. Applicant states:

“

That is, regardless of whether the cast metal is aluminum or not, a metal becomes a cast metal only if it is formed by casting in a mold, not because it is formed of aluminum.

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“

and...

“

For example, the term "cast" generally designates, as used in this case, a product or process in which the product is formed by pouring or injecting, for example, a liquid material in a mold to form a predetermined shape. Despite this well-known, ordinary technical meaning of the term, the Office has been attempting to distort the otherwise unambiguous meaning of the term, for no apparent reason, by introducing an unreasonable and improper interpretation that is inconsistent not only with the specification, but also with any reasonable interpretation that one of ordinary skill in the art would reach. The Examiner's interpretation of the term "cast"...

“

In response, the Examiner understands that Applicant is using “cast” in the claimed text as a verb. In response, the Examiner adds the clarifying footnotes that Sagusa also teaches the claimed structure: “...wherein the heater (“sheath heater 11”; [0011] computer translation) and the upper ceramic-metal composite (12, “cordierite” (2MgO, 2Al<sub>2</sub>O<sub>3</sub>, and 5SiO<sub>2</sub>), [0012]) are cast<sup>3</sup> in the base metal (“aluminum rolled stock 13” [0011])...”. The Examiner maintains his grounds of rejection. Further, the Examiner notes that claim language must be given its “broadest reasonable interpretation” as required by MPEP 2111. In this case, the Examiner’s unabridged dictionary definition<sup>3</sup> is the Examiner’s “broadest reasonable interpretation”.

12. Applicant states:

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Smith discloses electrostatic chucks formed by bonding ceramic members with a layer of active braze alloy. As shown in Fig. 2, the chuck 46 includes a dielectric layer 50, an electrode 54, and a base 58. The electrode 54 is an active braze alloy, while dielectric layer 50 and base 58 are typically ceramic materials such as (but not limited to) alumina, silicon nitride, aluminum nitride, barium titanate, or calcium titanate. See col. 4, lines 31-38, of Smith.

“

In response the Examiner notes that Applicant has mischaracterized the Examiner's citation of Smith. The Examiner cites Smith as teaching a ceramic chuck 54, not 46.

Applicant further states:

“

The base 58, however, cannot correspond to the recited “upper ceramic-metal composite” because, among other things, it is made of ceramic materials, as explicitly disclosed in col. 4, lines 36-37, of Smith.

“

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Applicant's statement suggests an alternate, specification containing, definition for Applicant's "upper ceramic-metal composite" as being something other than "ceramic materials". In this respect, the Examiner extracts from Applicant's own specification text which suggests the contrary. For example:

"

FIG. 3 is a graph showing the relationship between the contents (volume percentages) of SiC and Al in an Al-SiC composite...

" (page 5, lines 17-20) – SiC *is* a ceramic

"

Each of the ceramic-metal composites 40A, 40B are a *composite* of a metal such as aluminum, and a ceramic such as SiC (silicon carbide), AlN (aluminum nitride), or Al<sub>2</sub>O<sub>3</sub> (alumina).

" (page 7, lines 5-10) – All of Applicant's stated materials are "ceramics" as argued to the contrary by Applicant. Other, consistent examples, are provided in Applicant's specification. Further, Smith teaches Smith's upper ceramic-metal composite (58; Figure 2; column 4; lines 30-45) of identical materials.

13. Applicant states:

"

Instead, Smith merely discloses an electrostatic chuck formed by bonding ceramic materials with a layer of active alloy, with absolutely no teaching or suggestion of casting a heater or a ceramic-metal composite in a base metal while leaving an upper surface of the upper ceramic-metal composite exposed.

"

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14. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

15. Applicant states:

“

With respect to claims 31 and 33, the Office Action alleges, for the similar reasons discussed above, that the aluminum rolled material 13 of Sagusa is in a form of a preformed porous block and is infiltrated with the base metal, as recited in claims 31 and 33, because the aluminum rolled material 13 is made of aluminum. As explained above, the aluminum rolled material 13 merely covers the outer surface of the composite 12 without any infiltration of materials there between. Therefore, the aluminum-metal composite 12 cannot be infiltrated with the aluminum rolled material 13, as recited in claims 31.

“

16. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., “the aluminum rolled material 13 of Sagusa is in a form of a preformed porous block and is infiltrated with the base metal, as recited in claims 31 and 33, because the aluminum rolled material 13 is made of aluminum”) are not recited in the rejected claim. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Claim 31 requires, and Sagusa meets : Sagusa's ceramic material (Al<sub>2</sub>O<sub>3</sub>) contained in the upper (above) ceramic-metal

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composite (12, “cordierite” (2MgO, 2Al<sub>2</sub>O<sub>3</sub>, and 5SiO<sub>2</sub>), [0012]) of ceramics” [0012]) is in a form of a preformed porous block and is infiltrated<sup>2</sup> with the base metal (“aluminum rolled stock 13” [0011]) made of a cast metal, as claimed by claim 31, and the plasma processing apparatus according to claim 16, wherein the ceramic material (Al<sub>2</sub>O<sub>3</sub>) contained in the upper (above) ceramic-metal composite (12, “cordierite” (2MgO, 2Al<sub>2</sub>O<sub>3</sub>, and 5SiO<sub>2</sub>), [0012]) of ceramics” [0012]) arranged above the heater (coil 11; Figure 1B,3) is in a form of a preformed porous block and is infiltrated<sup>2</sup> with the base metal (“aluminum rolled stock 13” [0011]) made of a cast metal – Applicant’s specification (page 12, line 37 – page 13, line 2) teaches aluminum as the “cast metal”, as claimed by claim 33

17. Applicant states that claim 29 is not addressed in the body of the Examiner’s claim rejections. The Examiner disagrees. Specifically, the Examiner states in the final portion of the 103 rejection that...” It would ... to embed Smith’s electrostatic chuck to Sagusa’s upper, exposed, ceramic-metal composite (12, “cordierite” (2MgO, 2Al<sub>2</sub>O<sub>3</sub>, and 5SiO<sub>2</sub>), [0012]; Figure 3,4) and optimize the compositions for achieving thermal expansion matching. ”. The Examiner’s proposed combination of the references thus includes Applicant’s claim 29 requirements of “ wherein the ceramic electrostatic chuck includes a ceramic base of a ceramic material (Al<sub>2</sub>O<sub>3</sub>) and a metallic electrode embedded in the ceramic base and adapted to generate an electrostatic force that attracts the object to be treated, as claimed by claim 29”. As such, the Examiner has met the claimed requirements of Applicant’s invention.

18. In response to applicant's argument that there is no suggestion to combine the references of Sagusa et al (JP09-165681)<sup>4</sup> in view of Smith; Peter C. (US 5,600,530 A) and Niori; Yusuke

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<sup>4</sup> Refer to Japanese Patent Office machine translation of November 6, 2002.

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et al (US 6,101,969 A), the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the Examiner has already demonstrated, by the Examiner's correspondence to Applicant's claimed invention that all of the cited and applied prior art teach motivation to combine the references found in the references themselves – "Motivation to embed Smith's electrostatic chuck to Sagusa's upper, exposed, ceramic-metal composite and optimize the compositions for achieving thermal expansion matching is for making a heated ceramic chuck that is durable as taught by Sagusa ([0012]), Smith (column 3; lines 1-3), and Niori (column 15; lines 1-16)."

19. Applicant contends that Sagusa does not teach that Sagusa's upper surface (top 13' Figure 4) of Sagusa's upper ceramic-metal composite (12, "cordierite" (2MgO, 2Al<sub>2</sub>O<sub>3</sub>, and 5SiO<sub>2</sub>), [0012]) is exposed for joining to an lower surface of an electrostatic chuck; claim 6, 16, because Sagusa's upper surface (top 13' Figure 4) of Sagusa's upper ceramic-metal composite (12, "cordierite" (2MgO, 2Al<sub>2</sub>O<sub>3</sub>, and 5SiO<sub>2</sub>), [0012]) is not "exposed". However, the Examiner cites in his complete 103 rejection that "It ... to embed Smith's electrostatic chuck to Sagusa's upper, exposed, ceramic-metal composite (12, "cordierite" (2MgO, 2Al<sub>2</sub>O<sub>3</sub>, and 5SiO<sub>2</sub>), [0012]; Figure 3,4) and optimize the compositions for achieving thermal expansion matching."

20. With respect to Applicant's arguments on page 16, covering the Smith reference, one cannot show nonobviousness by attacking references individually where the rejections are based

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on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

21. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

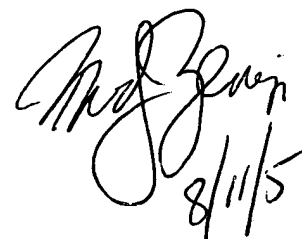
### ***Conclusion***

22. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272.1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official fax phone number for the 1763 art unit is (703) 872-9306. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272-1435.

Handwritten signature of Rudy Zervigon and the date 8/11/5.